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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/451,684	11/30/1999	SANJAY DABRAL	42390.P7112	9379

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SETH Z KALSON
BLAKELY SOKOLOFF TAYLOR AND ZAFMAN LLP
12400 WILSHIRE BOULEVARD SEVENTH FLOOR
LOS ANGELES, CA 900251026

EXAMINER

CHANG, DANIEL D

ART UNIT	PAPER NUMBER
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2819

DATE MAILED: 12/05/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/451,684

Applicant(s)

DABRAL ET AL.

Examiner

Daniel D. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

Drawings

This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sundstrom (US5602494).

Regarding claims 1-15, Sundstrom discloses, in figures 1 and 2, a bus comprising:
a transmission line (line connected to 104) having a characteristic impedance (col. 1, lines 50+);

a pMOSFET driver (121) to drive the transmission line, the pMOSFET driver having a source connected to a voltage source so as to be biased to a voltage V_{cc} (core voltage 150) and a drain connected to the transmission line;

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at least one termination device (nMOSFET 122, 132, 222 providing a quiescent voltage in some extent when pMOSFET is off) connecting the transmission line to ground (160) to match the characteristic impedance of the transmission line (col. 1, lines 50+), wherein the transmission line have two ends (inherent); and

an agent (110, 210) connected to the transmission line.

Method claims 16-17 are essentially the same in scope as apparatus claims 1-15 as discussed above and are rejected similarly.

Regarding claims 18 and 20, Sundstrom discloses, in figures 1 and 2, a bus comprising:
a transmission line (line connected to 104) having a termination device (120, 130, 220) to reduce signal reflections (col. 1, lines 50+);

a pMOSFET driver (221) to drive the transmission line, the pMOSFET driver having a source connected to a voltage source so as to be biased to a voltage V_{cc} (core voltage 150);

a nMOSFET driver (222) coupled to the transmission line, the nMOSFET driver having a source at a substrate voltage V_{ss} (160); and

a combinational logic circuit (210) coupled to the nMOSFET driver.

Regarding claim 19, Sundstrom discloses, in figures 1 and 2, that the combinational logic circuit is coupled to the nMOSFET driver so that the nMOSFET driver has a first ON resistance when the pMOSFET driver is ON and a second ON resistance when the pMOSFET driver is OFF, wherein the first and second ON resistances are not equal to each other (see col. 4-7).

Regarding claim 21, Sundstrom discloses, in figures 1 and 2, that the pMOSFET driver and nMOSFET in combination have an impedance substantially matched to the transmission line

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if both the pMOSFET driver and nMOSFET driver are switched ON, and wherein the nMOSFET has an impedance substantially matched to the transmission line if the pMOSFET driver is switched OFF (see col. 4-7).

Claims 1-3, 5-12, and 14-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Cooperman et al. (US5045730).

Regarding claims 1-3, 5-12, and 14-15, Cooperman et al. discloses, in fig. 4, a bus comprising:

- a transmission line (31, 33) having a characteristic impedance (col. 3, lines 52+);
- a pMOSFET driver (P) to drive the transmission line, the pMOSFET driver having a source connected to a voltage source (VDD) so as to be biased to a voltage Vcc (core voltage) and a drain connected to the transmission line;

- at least one termination device (resistors R4-R8 providing a quiescent voltage in some extent when pMOSFET P is off) connecting the transmission line to ground (GND) to match the characteristic impedance of the transmission line (col. 3, lines 57+), wherein the transmission line have two ends (inherent); and

- an agent (logic circuits; col. 1, lines 7+, 46+) connected to the transmission line.

Method claims 16-17 are essentially the same in scope as apparatus claims 1-3, 5-12, and 14-15 as discussed above and are rejected similarly.

Regarding claim 18, Cooperman et al. discloses, in fig. 4, a bus comprising:

- a transmission line (31, 33) having a termination device (resistors R4-R8) to reduce signal reflections (inherent; see col. 3, lines 52+);

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a pMOSFET driver (P) to drive the transmission line, the pMOSFET driver having a source connected to a voltage source (VDD) so as to be biased to a voltage Vcc (core voltage);

a nMOSFET driver (N) coupled to the transmission line, the nMOSFET driver having a source at a substrate voltage Vss (Vss); and

a combinational logic circuit (logic circuits; col. 1, lines 7+, 46+) coupled to the nMOSFET driver.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooperman et al. in view of Yokota et al. (US 5635859)

The teachings of Cooperman et al. have been discussed above.

Cooperman et al. does not disclose that each at least one termination device comprises an nMOSFET.

Yokota et al discloses that the resistor can be replaced by field effect transistor (col. 7, lines 44+).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to substitute the resistor of Cooperman et al. with an nMOSFET transistor as taught by Yokota et al. It is an obvious matter of substitution of equivalence.

Response to Arguments

Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

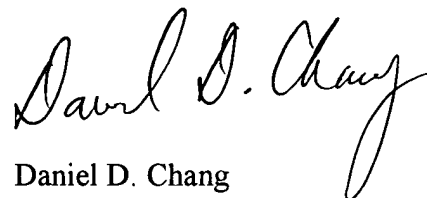
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lvovsky et al. discloses a transmission line which is terminated on each end by a terminating resistor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel D. Chang whose telephone number is (703) 306-4549. The examiner can normally be reached on Monday through Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Tokar can be reached on (703) 305-3493. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Daniel D. Chang
Examiner
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